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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : DE-GOL
PCT No : PCT/GB 01/02537
Filed : February 28, 2002
For : RIDE....
Dated : March 1, 2002

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Prior to initial examination, please amend the above-identified application as follows:

IN THE SPECIFICATION

Please replace the specification originally filed, with the enclosed substitute specification. A marked up copy of the original specification is attached. Applicant states that no new matter has been added.

IN THE CLAIMS

1 (AMENDED) An amusement ride comprising an output member having an anthropomorphic robot arm with six degrees of movement; a passenger station in movable engagement with said output member; and a platform

2. (AMENDED) An amusement ride as claimed in Claim 1, further comprising a support

connection to said robot arm, said support connection being on the ground

3. (AMENDED) An amusement ride as claimed in Claim 1, further comprising a support connection to said robot arm, said support connection being connected to a wall.

4. (AMENDED) An amusement ride as claimed in Claim 1, further comprising a support connection to said robot arm, said support connection being connected to a ceiling.

5 (AMENDED) An amusement ride as claimed in Claim 1, further comprising a carousel, the robot arm being mounted on said carousel

6. (AMENDED) An amusement ride as claimed in Claim 1, further comprising a column, said robot arm being mounted on said column.

7. (AMENDED) An amusement ride as claimed in Claim 6, wherein said column is provided with means to cause vertical movement of the ride along a path parallel to an axis of the column.

8. (AMENDED) An amusement ride, as claimed in Claim 6 or 7, wherein said column is mounted on a carousel

9. (AMENDED) An amusement ride as claimed in Claim 1, wherein the passenger station comprises one or more seats.

10 (AMENDED) An amusement ride as claimed Claim 1, wherein the passenger station has means for audio-visual interaction

11. (AMENDED) An amusement ride as claimed in Claim 10, wherein the audio visual interaction is respectively provided by speakers and a display means.

12. (AMENDED) An amusement ride as claimed in Claim 11, wherein the audiovisual interaction is synchronized with movements of the said ride.

13. (AMENDED) An amusement ride as claimed in Claim 11 or Claim 12, wherein the audio-visual interaction is stored on a data carrier

14. (AMENDED) An amusement ride as claimed in Claim 13, wherein the data carrier is a Mini Disc, a CD-ROM, a magneto-optical device, a video tape, a hard drive, a Digital Versatile Disc (DVD) or equivalent data carrier

15. (AMENDED) An amusement ride as claimed in Claim 14, wherein the audio visual interaction is stored on a combination of any two or more of said data carriers.

16. (AMENDED) An amusement ride as claimed in Claim 1, further comprising lights for providing lighting effects throughout the ride.

17. (AMENDED) An amusement ride as claimed in Claim 16, further comprising synchronizing means for synchronizing the lighting effects with the ride.

18 (AMENDED) An amusement ride as claimed in Claim 16, or Claim 17, wherein the lighting effects comprise one or more of strobe, laser or disco light effects

19. (AMENDED) An amusement ride as claimed in Claim 11, wherein the display means comprises a plasma screen, a liquid crystal display (LCD), an active matrix Organic Light Emitting Diode display (OLED) or a Light Emitting Polymer (LEP) display.

20. (AMENDED) An amusement ride as claimed in Claim 9, wherein the passenger station seats include a retaining means for retaining a passenger relative to the seats.

21 (AMENDED) An amusement ride as claimed in Claim 20, wherein the retaining means comprises a belt or similar harness

22 (AMENDED) An amusement ride as claimed in Claim 20, wherein the retaining means comprises a pull down harness.

23. (AMENDED) An amusement ride as claimed in Claim 20 or 21 or 22, further comprising a linear actuator wherein the retaining means is in operative engagement with the linear actuator.

24. (AMENDED) An amusement ride as claimed in claim 1, further comprising a weight sensor.

25. (AMENDED) An amusement ride as claimed in Claim 24, wherein the weight sensor acts, in use, to counter out of balance loads

26. (AMENDED) An amusement ride as claimed in Claim 24, wherein the weight sensor acts, in use, to counter a maximum weight overload.

27. (AMENDED) An amusement ride as claimed in claim 1, further comprising a controller

28. (AMENDED) An amusement ride as claimed in Claim 27, wherein the controller is located in the passenger station.

29 (AMENDED) An amusement ride as claimed in Claim 27, wherein the controller is located at or adjacent to a passenger entrance to the ride.

30 (AMENDED) An amusement ride as claimed in Claim 27 or 28 or 29, wherein the controller is used to select a pre-programmed ride.

31 (AMENDED) An amusement ride as claimed in Claim 27 or 28 or 29, wherein the controller is used to control said amusement ride independently of a pre-programmed ride

32. (AMENDED) An amusement ride as claimed in Claim 1, further comprising a joy stick controller.

33. (AMENDED) An amusement ride as claimed in Claim 1, further comprising a steering wheel controller

34 (AMENDED) An amusement ride as claimed in Claim 1, further comprising a joypad controller

35. (AMENDED) An amusement ride as claimed in Claim 1, further comprising a controller including a foot pedal

36 (AMENDED) An amusement ride as claimed in Claim 1, further comprising a controller with one or more of a joy stick, a steering wheel, a joypad and a foot pedal.

37. (AMENDED) An amusement ride as claimed in Claim 1, further comprising a ticket reader for reading a ticket, said ticket being compatible with said ride.

38. (AMENDED) An amusement ride as claimed in Claim 37, wherein the ticket is a card made from a plastic material

39 (AMENDED) An amusement ride as claimed in Claim 37 or 38, wherein the ticket has a code defining a pre-programmed ride

40. (AMENDED) An amusement ride as claimed Claim 39, wherein the ticket code is a bar code.

41. (AMENDED) An amusement ride as claimed in Claim 39, wherein the code is contained in a microchip incorporated in the ticket

42 (AMENDED) An amusement ride as claimed in claim 1, further comprising one or more steps with said platform in operative engagement with said steps

43. (AMENDED) An amusement ride as claimed in Claim 42, wherein the platform is adapted for pivotal movement about a substantially horizontal axis.

44. (AMENDED) An amusement ride as claimed in Claim 42 or 43, further comprising an actuator wherein the platform is raised and lowered about its axis by said actuator

45. (AMENDED) An amusement ride as claimed in Claim 44, wherein said actuator is one of a hydraulic actuator and a pneumatic actuator

46. (AMENDED) An amusement ride as claimed in Claim 44, further comprising another actuator that is a hydraulic actuator to raise and lower the platform and said actuator is a pneumatic actuator.

47 (AMENDED) An amusement ride as claimed in Claim 1, further comprising one or more steps in engagement with the platform

48. (AMENDED) An amusement ride as claimed in Claim 1, wherein the platform is retractable into a stowage box and is extendable in use to a loading position.

49 (AMENDED) An amusement ride as claimed in Claim 48, further comprising an actuator for retracting and extending the platform

50 (AMENDED) An amusement ride as claimed in Claim 49, wherein said actuator is one of a hydraulic actuator and a pneumatic actuator.

51. (AMENDED) An amusement ride as claimed in Claim 48, further comprising a hydraulic actuator and a pneumatic actuator for retracting and extending said platform

52 (AMENDED) An amusement ride as claimed in Claim 1, further comprising a safety barrier associated with the platform.

53. (AMENDED) An amusement ride as claimed in Claim 52, wherein the safety barrier is adapted for pivotal movement about a substantially vertical axis.

54. (AMENDED) An amusement ride as claimed in Claim 52, wherein said safety barrier and said platform are each adapted for pivotal movement about a substantially 45° axis.

55 (AMENDED) An amusement ride as claimed in claim 1, further comprising safety means

56 (AMENDED) An amusement ride as claimed in Claim 55, wherein the safety means is controlled by a computer

57. (AMENDED) An amusement ride as claimed in Claim 55, wherein the safety means comprises actuators.

58 (AMENDED) An amusement ride as claimed in Claim 57, wherein the actuators are one or more of electro-mechanical actuators, hydraulic actuators and pneumatic actuators.

59. (AMENDED) An amusement ride as claimed in Claim 55, wherein the safety means limits a Gforce generated by the ride

60 (AMENDED) An amusement ride as claimed in claim 1, further comprising another output member having an anthropomorphic robot arm with six degrees of movement; and another passenger station in movable engagement with said another output member

61 (AMENDED) An amusement ride as claimed in Claim 60, wherein said another output member and said another passenger station are programmed to move synchronously with said output member and said passenger station.

62 (AMENDED) An amusement ride as claimed in Claim 60, further comprising a further output member having an anthropomorphic robot arm with six degrees of movement, and a further passenger station in movable engagement with said further output member wherein said another output member and said another passenger station are programmed to move synchronously with said output member and said passenger station and said further output member and said further passenger station

63 (AMENDED) An amusement ride as claimed in claim 1, further comprising optical emitter and receiver assemblies to monitor an aligning procedure.

64. (AMENDED) An amusement ride as claimed in Claim 63, further comprising optical emitter and receiver assemblies to monitor said ride throughout a ride sequence.

65. (AMENDED) An amusement ride as claimed in Claim 64, wherein the optical emitter and receiver assemblies are selected from the group consisting of infra-red, photoelectric and laser emitter and receiver assemblies

66. (AMENDED) An amusement ride as claimed in claim 60, wherein said another output member and said another passenger station are linked for actuation with said output member and said passenger station to provide a combat game.

67 (AMENDED) An amusement ride as claimed in Claim 66, wherein the passenger stations are fitted with optical emitter and receiver assemblies.

68 (AMENDED) An amusement ride as claimed in claim 1, wherein the ride is waterproofed for use in a splash park

69 (AMENDED) An amusement ride as claimed in Claim 68, wherein the ride is used

$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

REMARKS

Claims 1 through 69 are in this application and are presented for consideration. Claims 1 through 69 have been amended. The amended claims present the same subject matter as the original claims but have been amended to adapt them to the U. S. style.

The specification and claims have been amended in order to place this application in better form. Appropriate headings have been added. No new matter has been added.

Favorable action on the merits is respectfully requested.

Respectfully submitted
for Applicant,

By

John James McGlew
Registration No. 31,903
McGLEW AND TUTTLE, P.C.

JJM:jj/tf
70471.1

Enclosed: Version of Claims Showing Changes, Substitute Specification and Marked up copy of Translation

DATED March 1, 2002
SCARBOROUGH STATION
SCARBOROUGH, NEW YORK 10510-0827
(914) 941-5600

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McGLEW AND TUTTLE, P.C.
SCARBOROUGH STATION, SCARBOROUGH, NY 10510-0827

BY *Ioni Anna Fonte* DATE March 1, 2002

VERSION OF CLAIMS SHOWING CHANGES

1. (AMENDED) An amusement ride comprising: an output member having an anthropomorphic robot arm adapted for with six degrees of movement; ~~said ride further comprising:~~ a passenger station in movable engagement with said output member; and a platform; ~~and optionally a ticket reader~~

2. (AMENDED) An amusement ride as claimed in Claim 1, ~~in which said ride is supported~~ further comprising a support connection to said robot arm, said support connection being on the ground.

3. (AMENDED) An amusement ride as claimed in Claim 1, ~~in which said ride is supported from a wall:~~

4. further comprising a support connection to said robot arm, said support connection being connected to a wall.

4. (AMENDED) An amusement ride as claimed in Claim 1, ~~in which said ride is supported from a ceiling:~~

5. further comprising a support connection to said robot arm, said support connection being connected to a ceiling.

5. (AMENDED) An amusement ride as claimed in Claim 1, ~~in which said ride is mounted on a carousel:~~

6. further comprising a carousel, the robot arm being mounted on said carousel.

6. (AMENDED) An amusement ride as claimed in Claim 1, ~~in which said ride is mounted on a column:~~

7. further comprising a column, said robot arm being mounted on said column.

7. (AMENDED) An amusement ride as claimed in Claim 6, ~~in which~~ wherein said column is provided with means to cause vertical movement of the ride along a path parallel to ~~the~~ an axis of the column.

8. (AMENDED) An amusement ride, as claimed in Claim 6 or 7, ~~in which~~ wherein said column is mounted on a carousel

9. (AMENDED) An amusement ride as claimed in any one of Claims 1 to 8, ~~in which~~ wherein the passenger station comprises one or more seats

10. (AMENDED) An amusement ride as claimed in any one of the preceding ~~c~~ l claims in

which 1, wherein the passenger station has means for audio-visual interaction

11. (AMENDED) An amusement ride as claimed in Claim 10, ~~in which~~wherein the audio visual interaction is respectively provided by speakers and a display means.

12. ~~(AMENDED)~~ An amusement ride as claimed in Claim 11, ~~in which~~wherein the audiovisual interaction is synchronized with movements of the said ride.

13. ~~(AMENDED)~~ An amusement ride as claimed in Claim 11 or Claim 12, in ~~which~~wherein the audio-visual interaction is stored on a data carrier

14. ~~(AMENDED)~~ An amusement ride as claimed in Claim 13, ~~in which~~wherein the data carrier is a Mini Disc, a CD-ROM, a magneto-optical device, a video tape, a hard drive, a Digital Versatile Disc (DVD) or equivalent data carrier

15 ~~(AMENDED)~~ An amusement ride as claimed in Claim 14, ~~in which~~wherein the audio
visual interaction is stored on a combination of any two or more of said data carriers

16 ~~(AMENDED)~~ An amusement ride as claimed in any one of the preceding claims, in ~~which~~Claim 1, further comprising lights for providing lighting effects ~~are used throughout the~~
ride

17. (AMENDED) An amusement ride as claimed in Claim 16, ~~in which~~further comprising
synchronizing means for synchronizing the lighting effects ~~are synchronised~~ with the ride.

18. ~~(AMENDED)~~ An amusement ride as claimed in Claim 16, or Claim 17, in ~~which~~wherein the lighting effects comprise one or more of strobe, laser or disco light effects ~~or any combination thereof~~.

19. (AMENDED) An amusement ride as claimed in Claim 11, ~~in which~~wherein the display means comprises a plasma screen, a liquid crystal display (LCD), an active matrix Organic Light Emitting Diode display (OLED) or a Light Emitting Polymer (LEP) display.

20 ~~(AMENDED)~~ An amusement ride as claimed in ~~any one of Claims 9 to 19~~ 2, in ~~which~~wherein the passenger station seats include a retaining means for retaining a passenger relative to the seats

21 ~~(AMENDED)~~ An amusement ride as claimed in Claim 20, ~~in which~~wherein the retaining means comprises a belt or similar harness

22 ~~(AMENDED)~~ An amusement ride as claimed in Claim 20, ~~in which~~wherein the retaining means comprises a pull down harness.

23 (AMENDED) An amusement ride as claimed in ~~any one of Claims 20 to or 21 or 22, in~~
~~which~~ further comprising a linear actuator wherein the retaining means is in operative engagement

with ~~at~~the linear actuator.

24. (AMENDED) An amusement ride as claimed in ~~any one of the preceding claims 1, in~~ which said ride further comprises~~comprising~~ a weight sensor

25. (AMENDED) An amusement ride as claimed in Claim 24, ~~in which~~wherein the weight sensor acts, in use, to counter out of balance loads

26. (AMENDED) An amusement ride as claimed in Claim 24, ~~in which~~wherein the weight sensor acts, in use, to counter a maximum weight overload.

27. (AMENDED) An amusement ride as claimed in ~~any one of the preceding claims 1, in~~ which said ride further comprises~~comprising~~ a controller.

28. (AMENDED) An amusement ride as claimed in Claim 27, ~~in which~~wherein the controller is located in the passenger station.

29. (AMENDED) An amusement ride as claimed in Claim 27, ~~in which~~wherein the controller is located at or adjacent to a passenger entrance to the ride

30. (AMENDED) An amusement ride as claimed in Claim 27; ~~or~~or 28 or 29, in ~~which~~wherein the controller is used to select a pre-programmed ride.

31. (AMENDED) An amusement ride as claimed in Claim 27; ~~or~~or 28 or 29, in ~~which~~wherein the controller is used to control said amusement ride independently of the ~~a~~ pre-programmed ride

32. (AMENDED) An amusement ride as claimed in ~~any one of Claims 27 to 31, in~~ which the further comprising a joy stick controller is a joystick

33. (AMENDED) An amusement ride as claimed in ~~any one of Claims 27 to 31, in~~ which the controller is further comprising a steering wheel controller

34. (AMENDED) An amusement ride as claimed in ~~any one of Claims 27 to 31, in~~ which the further comprising a joy pad controller is a joy pad

35. (AMENDED) An amusement ride as claimed in ~~any one of Claims 27 to 34, in~~ which the controller further comprises one or more comprising a controller including a foot pedals.

36. (AMENDED) An amusement ride as claimed in ~~any one of Claims 27 to 35, in which the controller comprises a combination of any~~Claim 1, further comprising a controller with one or more of the controllers a joy stick, a steering wheel, as claimed in Claims 32 to 35 joy pad and a foot pedal.

37. ~~(AMENDED)~~ An amusement ride as claimed in ~~any one of Claims 1 to 36~~, in which ~~the further comprising a ticket reader can read for reading~~ a ticket, said ticket being compatible with said ride.

38. ~~(AMENDED)~~ An amusement ride as claimed in Claim 37, in which ~~wherein~~ the ticket is a card made from a plastics material

39. ~~(AMENDED)~~ An amusement ride as claimed in Claim 37 or 38, in which ~~wherein~~ the ticket has a code defining a pre-programmed ride.

40. ~~(AMENDED)~~ An amusement ride as claimed Claim 39, in which ~~wherein~~ the ticket code is a bar code.

41. ~~(AMENDED)~~ An amusement ride as claimed in Claim 39, in which ~~wherein~~ the code is contained in a microchip incorporated in the ticket.

42. ~~(AMENDED)~~ An amusement ride as claimed in ~~any one of the preceding claims 1~~, in which ~~said ride comprises further comprising~~ one or more steps with ~~a said~~ platform in operative engagement with said steps.

43. ~~(AMENDED)~~ An amusement ride as claimed in Claim 42, in which ~~wherein~~ the platform is adapted for pivotal movement about a substantially horizontal axis

44. ~~(AMENDED)~~ An amusement ride as claimed in Claim 42 or 43, in which ~~further comprising an actuator wherein~~ the platform is raised and lowered about its axis by means of one or more ~~said~~ actuators.

45. ~~(AMENDED)~~ An amusement ride as claimed in Claim 44, in which ~~the or each actuator is hydraulically or pneumatically operated~~.

46. ~~wherein said actuator is one of a hydraulic actuator and a pneumatic actuator.~~

46. ~~(AMENDED)~~ An amusement ride as claimed in ~~any one of Claims 42 to 45~~, in which ~~the platform is raised or lowered about its axis by a combination of hydraulic and Claim 44, further comprising another actuator that is a hydraulic actuator to raise and lower the platform and said actuator is a pneumatic actuators~~

47. ~~(AMENDED)~~ An amusement ride as claimed in ~~any one of Claims 1 to 41~~, in which ~~said ride comprises further comprising~~ one or more steps in engagement with a ~~fixed the~~ platform

48. ~~(AMENDED)~~ An amusement ride as claimed in ~~any one of Claims 1 to 41~~, in which ~~wherein the platform is retracted retractable into a stowage box and, in use, said platform is extended extendable in use to engage with the ride a loading position.~~

49. ~~(AMENDED)~~ An amusement ride as claimed in Claim 48, in which ~~the platform is~~

~~retracted and extended by means of one or more actuators.~~

50. further comprising an actuator for retracting and extending the platform.

50. (AMENDED) An amusement ride as claimed in Claim 49, in which the or each actuator is hydraulically or pneumatically operated.

51. wherein said actuator is one of a hydraulic actuator and a pneumatic actuator.

51. (AMENDED) An amusement ride as claimed in any one of Claims 48 to 50, in which the platform is retracted and extended by means of a combination of hydraulic and Claim 48, further comprising a hydraulic actuator and a pneumatic actuatorsactuator for retracting and extending said platform.

52 (AMENDED) An amusement ride as claimed in ~~any one of Claims 42 to 51~~ 1, in ~~which the platform~~ further comprises ~~comprising~~ a safety barrier associated with the platform.

53 (AMENDED) An amusement ride as claimed in Claim 52, ~~in which~~wherein the safety barrier is adapted for pivotal movement about a substantially vertical axis.

54 ~~(AMENDED)~~ An amusement ride as claimed in Claim 42, ~~and in any one of Claims 43 to 53, when dependent on Claim 42, in which the platform and~~52, wherein said safety barrier and
said platform are each adapted for pivotal movement about a substantially 45° axis.

55. ~~(AMENDED)~~ An amusement ride as claimed in any one of the preceding claims in which said ride ~~1~~ further comprises ~~comprising~~ safety means.

56. ~~(AMENDED)~~ An amusement ride as claimed in Claim 55, ~~in which~~wherein the safety means ~~are~~is controlled by a computer

57 ~~[AMENDED]~~ An amusement ride as claimed in Claim 55 ~~or 56~~, in which wherein the safety means comprises actuators

58 ~~(AMENDED)~~ An amusement ride as claimed in Claim 57, in ~~which~~wherein the actuators are ~~electro-mechanically~~one or more of electro-mechanical actuators, ~~hydraulically or pneumatically operated~~, or a combination of Electro-Mechanical, hydraulic and pneumatic operation.

59. hydraulic actuators and pneumatic actuators

59. (AMENDED) An amusement ride as claimed in ~~any one of Claims 55 to 58, in which~~
~~wherein~~ the safety means limits a Gforce generated by ~~said~~~~the~~ ride.

60 ~~(AMENDED)~~ An amusement ride as claimed in any one of the preceding claims,
~~comprising more than one of said rides.~~

marked up
version of
the translation

Docket # 70471

RIDE APPARATUS

FIELD OF THE INVENTION

This invention relates to ride apparatus and particularly (but not exclusively) to ride apparatus used in amusement parks and the like

BACKGROUND OF THE INVENTION

5 A variety of amusement rides is known for use in amusement parks.- Such rides typically
comprise dodgem, log flume, roller coaster and vertical drop rides.- However, these rides are
commonplace and there is an increasing demand for new, novel rides to maintain interest in said
parks

SUMMARY OF THE INVENTION

Accordingly, the present invention provides an amusement ride comprising an output member having an anthropomorphic robot arm adapted for six degrees of movement, said ride further comprising a passenger station in moveable engagement with said output member, a platform, and optionally a ticket reader

The amusement ride is preferably supported on the ground – Alternatively, the amusement ride may be supported from a wall or from a ceiling.

More preferably, the ride may be mounted on a carousel – Alternatively, the ride may be mounted on a column - The column may be provided with means to cause vertical movement of the ride along a path parallel to the axis of the column – Alternatively, the ride may be mounted on a column which is in turn mounted on a carousel.

The passenger station preferably comprises one or more seats

The passenger station preferably has means for audio-visual interaction.– The audio-visual interaction may be respectively provided by speakers and a display means

The visual and audio interaction may, separately or together, be synchroniszed with movements of the ride.

The audio and visual interaction data is stored on a data carrier. - The data carrier may be a Mini Disc (MD), a CD-ROM, a magneto-optical device, a video tape, a hard drive, a Digital Versatile Disc (DVD) or other equivalent data carrier. -The audio and visual interaction data may be stored on a combination of any two or more of the aforementioned data carriers.

5 Lighting effects may be used throughout the audio-visual interaction -The lighting effects may be synchronised with the ride - The lighting effects may comprise, for example, strobe, laser or disco light shows or any combination thereof

The display means may be a plasma screen, a liquid crystal display, an active matrix Organic Light Emitting Diode (OLED) display, or a Light Emitting Polymer (LEP) display

10 The visual interaction may alternatively be provided by a projector and screen.
The seats preferably comprise retaining means to retain a passenger when the ride is operable.

The retaining means may comprise a belt, for example, a safety belt or a pull down rigid harness or similar harness - Alternatively, the retaining means may comprise a cage

The retaining means is preferably in operative engagement with a linear actuator.

The amusement ride may further comprise a weight sensor, said weight sensor providing a means to counter out of balance loads - Alternatively, the weight sensor provides a means to counter a maximum weight overload

5 The amusement ride may further comprise a controller.- The controller is preferably located in the passenger station - Alternatively, the controller is located at a passenger entrance to the ride.

The controller may be used to select a pre-programmed ride - Alternatively, the controller may be used to control the amusement ride independently of the pre-programmed ride

10 The controller is preferably a joystick - Alternatively, the controller may be a steering wheel or a joypad

The controller may further comprise one or more foot pedals

The controller may comprise a combination of the aforementioned joystick and/or steering wheel and/or joypad and/or foot pedals.

15 The ticket reader can read a ticket, said ticket preferably being compatible with said

ride -The ticket may be a card made of a plastics material - The ticket preferably has a code defining a pre-programmed ride -The code is preferably a bar code.- Alternatively, the code may be contained in a microchip incorporated in the ticket

5 The platform preferably comprises one or more steps, with a raised platform in operative engagement with said steps -The platform, in use, may suitably be adapted for pivotal movement about a substantially horizontal axis

The platform is preferably raised and lowered about its axis by means of an actuator. The actuator may be hydraulically or pneumatically operated - The platform may be raised or lowered about its axis by a combination of hydraulic or pneumatic actuators.

10 Alternatively, the platform may be fixed and the amusement ride may be adapted to be lowered to a position which allows the ingress and egress of passengers respectively on to or off from the amusement ride

15 In a further alternative the platform may be retracted into a stowage compartment and, in use, said platform is extended from the stowage compartment to engage with the ride in a lowered position.

The platform may be retracted and extended by means of one or more actuators.- The

actuators may be hydraulically or pneumatically operated, or a combination of hydraulic and pneumatic operation.

The platform preferably further comprises a safety barrier.- The safety barrier, in use, may suitably be adapted for pivotal movement about a substantially vertical axis.- Alternatively, the platform and safety barrier may each be adapted for pivotal movement about a substantially 45° axis (relative to the ground)

The safety barrier is preferably operated about its axis by means of an actuator - The actuator may be hydraulically or pneumatically operated

The amusement ride preferably further comprises safety means. -Preferably the safety means is controlled by a computer

Preferably the safety means comprises actuators — The actuators may be electro-mechanically, hydraulically or pneumatically operated, or a combination of electro-mechanical, hydraulic and pneumatic operation

The safety means preferably limits a G-force generated by the amusement ride

The amusement ride may comprise more than one of said rides - Where two or more

rides are employed they may be programmed to move synchronously. -Alternatively, it may be programmed to move asynchronously.- Two or more rides may be used in a combat game.

The ride may be water-proofed for use in a "splash park"

The ride may comprise water cannons for use in a combat-type game in a splash park.

5 ~~Preferred embodiments of the present invention will now be described, merely by way of example, with reference~~ The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its uses, reference is made to the accompanying drawings-

10 ~~Figure 1 shows~~ and descriptive matter in which preferred embodiments of the invention are illustrated.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

15 Figure 1 is a perspective view showing an amusement ride output member in accordance with the present invention-

Figures 3A and 3B show

Figure 2B is a side view of the amusement ride of Figure 1 in another operative condition during a ride;

Figure 2C is a side view of the amusement ride of Figure 1 in another operative condition during a ride;

Figure 2D is a side view of the amusement ride of Figure 1 in another operative condition during a ride;

Figure 2E is a side view of the amusement ride of Figure 1 in another operative condition during a ride;

Figure 2F is a top view of the amusement ride of Figure 1 in another operative condition during a ride;

Figure 3A is a side view of the amusement ride of Figure 1 in an alternative mounted conditions.—

~~Figure 4 shows condition.~~

Figure 3B is a side view of the amusement ride of Figure 1 in another alternative mounted condition:

Figure 4 is a perspective view showing two amusement rides of Figure 1 in a combat game:

Figures 6A to 6C show

Figure 5C is a side view showing a passenger station in accordance with the present invention:

Figures 7A to 7C show₂

Figure 6C is a side view showing another part of a first procedure for vacating the amusement

Figure 7A is a side view showing a part of a second procedure for vacating the amusement ride:

Figure 7B is a side view showing another part of a second procedure for vacating the

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Figure 8A is a side view showing a part of a third procedure for vacating the amusement ride:

~~Figures 9A to 9C show:~~

Figure 8B is a side view showing another part of a third procedure for vacating the amusement ride;

Figure 8C is a side view showing another part of a third procedure for vacating the amusement ride:

Figure 9A is a side view showing the use of linear actuators or safety interlocks in the operation of a retaining means.

Figure 10 shows,

Figure 9B is a side view showing the use of linear actuators or safety interlocks in the operation of a retaining means:

Figure 9C is a top view showing the use of linear actuators or safety interlocks in the operation of a retaining means;

Figure 10 is a schematic perspective view showing the ride operatively connected with other rides for synchronous movement-

Figures 11A to 11D show:

Figure 11A is a schematic perspective view showing combinations of rides operatively connected in an arrangement;

Figure 11B is a schematic perspective view showing combinations of rides operatively connected in an alternative arrangements;

Figures 12A and 12B show arrangement;

Figure 11C is a schematic perspective view showing combinations of rides operatively connected in an alternative arrangement;

Figure 11D is a schematic perspective view showing combinations of rides operatively connected in an alternative arrangement;

Figure 12A is a side view showing the ride adapted to be incorporated into a fairground ride, such as a carousel or the like;

Figure 12B is a side view showing the ride adapted to be incorporated into a fairground ride, such as vertical lift, or the like

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings in particular, Figure 1 shows an amusement ride 1 comprising a base portion 2 supported on the ground and a trunnion 7 mounted on the base portion 2 to give rotation about a substantially vertical axis A. The trunnion 7 is in operative engagement

with a first elongate member 4, said elongate member being adapted to move about a substantially horizontal axis B, said elongate member being in operative engagement with a second elongate member 6 adapted to move about a substantially horizontal axis C parallel to axis B. The second elongate member has a further 3 degrees of movement about the axis of said second elongate member 6 and a passenger station 15 in moveable engagement with said member. The amusement ride movements about said axes are controlled by motors 16, 17 and 18

Figures 2A to 2F illustrate the various conditions that the amusement ride 1 of Figure 1 may assume during a ride. The passenger station 15 is shown having two seats, 20 and 21

Referring to Figures 3A and 3B, alternative mountings of the amusement ride are illustrated. The ride 1 may be supported from a wall 30 or a ceiling 40. The passenger station may also be configured so that arms and legs of a passenger are unsupported.

Figure 4 shows two amusement rides 1 in use in a combat game. The two rides are diametrically opposed to each other at a predetermined distance X. Said rides are each mounted on a fixed base or (as shown) on a base 50 in sliding engagement with a rail track 51, the bases and the tracks being parallel with each other. The passenger stations 15 are provided with a controller 52 and with optical (e.g. infra-red, photoelectric or laser) emitter and receiver assemblies 53, enabling the said passenger stations 15 to interact with each other. In

a splash park, the optical emitter and receiver assemblies may be substituted with one or more water cannons

The ride is enclosed by a reticulated fence 44 having a closure 60 (for ingress and egress of passengers) and a ticket machine 61 located adjacent the closure 60, for passengers to buy tickets for said ride.

The combat game is controlled by a computer 70. The computer 70 is integrated with the ticket machine 61 and with the two rides

Figures 5A and 5B show the passenger station 15. The passenger station 15 is in movable engagement with the output member 80 of the ride. The passenger station 15 comprises a seat 81 with a weight sensor 90 located in the seat 81, a joystick controller 83 and a display means 82.

Figure 5C shows a passenger station 15 fitted with a pull down safety harness 84. The seat 81 is not contained in a capsule 85 (see Figure 5A)-.

Figures 6A to 6C illustrate an aligning procedure for the ride. The ride 1 is shown in a first operative condition 100, attained at the beginning or end of a ride. The robot then lowers to a second operative condition 101, where an optical emitter 200 and receiver 210 assembly, one of said emitter and receiver being located on the ride, ensure that the ride is in the correct

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In a further alternative shown in Figures 8A to 8C the ride 1 is in a first operative condition 100, attained at the beginning or at the end of a ride. The robot then lowers to a second operative condition 101, where an optical emitter 200 and receiver 210 assembly, one of said emitter and receiver being located on said ride, to ensure that the ride is in the correct alighting position. One or more optical emitter and receiver assemblies may be used to monitor the alighting aligning procedure. Concomitantly a platform 102 activated by hydraulics is extended from a first retracted condition 103 to a second operative condition 104 to engage with the ride 108. The engagement of the platform with the ride may facilitate part of a safety check for the above alighting aligning procedure.

Upon leaving the ride the retaining means (e.g. a safety belt or cage) must be released.

Figures 9A to 9C illustrate the use of shot bolt actuators 110 in releasing the retaining means. The shot bolt actuators can only be activated when the ride is in the aforementioned second operative condition 101. The shot bolt actuators 110 when activated release the retaining means 111, permitting the ingress and egress of passengers.

5 One or more amusement rides 1 of the present invention may be linked by a computer so as to move synchronously. The rides are controlled by a supervisor and control station 120, as illustrated in Figure 10. The amusement rides can also be programmed to move asynchronously to one another. The rides may also be assembled in various combinations as illustrated in Figures 11A to 11D.

10 The base 2 of the amusement ride 1 of the present invention can be supported on a carousel 130, as illustrated in Figure 12A. One or more of said rides can be mounted onto the carousel. The carousel 130 may alternatively have an elongate centrally located column 131, from which one or more of said rides 1 may be supported, as illustrated in Figure 12B. The rides can then also rotate and move in a vertical plane simultaneously.

ABSTRACT

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

ABSTRACT OF THE DISCLOSURE

An amusement ride ~~comprising~~includes an output member having an anthropomorphic robot arm adapted for six degrees of movement, ~~said~~ The ride further ~~comprising~~includes a passenger station in moveable engagement with said output member, a platform, and optionally a ticket reader

~~To be accompanied, when published, by Figure 1 of the drawings~~

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RIDE APPARATUS

This invention relates to ride apparatus and particularly (but not exclusively) to ride apparatus used in amusement parks and the like.

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A variety of amusement rides is known for use in amusement parks. Such rides typically comprise dodgem, log flume, roller coaster and vertical drop rides. However, these rides are commonplace and there is an increasing demand for new, novel rides to maintain interest in said parks.

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Accordingly, the present invention provides an amusement ride comprising an output member having an anthropomorphic robot arm adapted for six degrees of movement, said ride further comprising a passenger station in moveable engagement with said output member, a platform, and optionally a ticket reader.

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The amusement ride is preferably supported on the ground. Alternatively, the amusement ride may be supported from a wall or from a ceiling.

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More preferably, the ride may be mounted on a carousel. Alternatively, the ride may be mounted on a column. The column may be provided with means to cause vertical movement of the ride along a path parallel to the axis of the column. Alternatively, the ride may be mounted on a column which is in turn mounted on a carousel.

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The passenger station preferably comprises one or more seats.

The passenger station preferably has means for audio-visual interaction.

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The audio-visual interaction may be respectively provided by speakers and a display means.

The visual and audio interaction may, separately or together, be synchronised with movements of the ride.

5 The audio and visual interaction data is stored on a data carrier. The data carrier may be a Mini Disc (MD), a CD-ROM, a magneto-optical device, a video tape, a hard drive, a Digital Versatile Disc (DVD) or other equivalent data carrier. The audio and visual interaction data may be stored on a combination of any two or more of the aforementioned data carriers.

10

Lighting effects may be used throughout the audio-visual interaction. The lighting effects may be synchronised with the ride. The lighting effects may comprise, for example, strobe, laser or disco light shows or any combination thereof.

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The display means may be a plasma screen, a liquid crystal display, an active matrix Organic Light Emitting Diode (OLED) display, or a Light Emitting Polymer (LEP) display.

20 The visual interaction may alternatively be provided by a projector and screen.

The seats preferably comprise retaining means to retain a passenger when the ride is operable.

25

The retaining means may comprise a belt, for example, a safety belt or a pull down rigid harness or similar harness. Alternatively, the retaining means may comprise a cage.

30 The retaining means is preferably in operative engagement with a linear actuator.

The amusement ride may further comprise a weight sensor, said weight sensor providing a means to counter out of balance loads. Alternatively, the weight sensor provides a means to counter a maximum weight overload.

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The amusement ride may further comprise a controller. The controller is preferably located in the passenger station. Alternatively, the controller is located at a passenger entrance to the ride.

10 The controller may be used to select a pre-programmed ride. Alternatively, the controller may be used to control the amusement ride independently of the pre-programmed ride.

The controller is preferably a joystick. Alternatively, the controller may
 15 be a steering wheel or a joypad.

The controller may further comprise one or more foot pedals.

The controller may comprise a combination of the aforementioned
20 joystick and/or steering wheel and/or joypad and/or foot pedals.

The ticket reader can read a ticket, said ticket preferably being compatible with said ride. The ticket may be a card made of a plastics material. The ticket preferably has a code defining a pre-programmed ride. The code is preferably a bar code. Alternatively, the code may be contained in a microchip incorporated in the ticket.

The platform preferably comprises one or more steps, with a raised platform in operative engagement with said steps. The platform, in use, may suitably be adapted for pivotal movement about a substantially horizontal axis.

The platform is preferably raised and lowered about its axis by means of an actuator. The actuator may be hydraulically or pneumatically operated. The platform may be raised or lowered about its axis by a combination of hydraulic or pneumatic actuators.

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Alternatively, the platform may be fixed and the amusement ride may be adapted to be lowered to a position which allows the ingress and egress of passengers respectively on to or off from the amusement ride.

- 10 In a further alternative the platform may be retracted into a stowage compartment and, in use, said platform is extended from the stowage compartment to engage with the ride in a lowered position.

- 15 The platform may be retracted and extended by means of one or more actuators. The actuators may be hydraulically or pneumatically operated, or a combination of hydraulic and pneumatic operation.

- 20 The platform preferably further comprises a safety barrier. The safety barrier, in use, may suitably be adapted for pivotal movement about a substantially vertical axis. Alternatively, the platform and safety barrier may each be adapted for pivotal movement about a substantially 45° axis (relative to the ground).

- 25 The safety barrier is preferably operated about its axis by means of an actuator. The actuator may be hydraulically or pneumatically operated.

The amusement ride preferably further comprises safety means. Preferably the safety means is controlled by a computer.

Preferably the safety means comprises actuators. The actuators may be electro-mechanically, hydraulically or pneumatically operated, or a combination of electro-mechanical, hydraulic and pneumatic operation.

- 5 The safety means preferably limits a G-force generated by the amusement ride.

The amusement ride may comprise more than one of said rides. Where two or more rides are employed they may be programmed to move
10 synchronously. Alternatively, it may be programmed to move asynchronously.

Two or more rides may be used in a combat game.

The ride may be water-proofed for use in a "splash park".

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The ride may comprise water cannons for use in a combat-type game in a splash park.

Preferred embodiments of the present invention will now be described,
20 merely by way of example, with reference to the accompanying drawings.

Figure 1 shows an amusement ride output member in accordance with the present invention.

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Figures 2A to 2F show the amusement ride of **Figure 1** in operative condition during a ride.

Figures 3A and 3B show the amusement ride of **Figure 1** in alternative mounted conditions.

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Figure 4 shows two amusement rides of Figure 1 in a combat game.

5 Figures 5A to 5C show a passenger station in accordance with the present invention.

Figures 6A to 6C show a first procedure for vacating the amusement ride.

10 Figures 7A to 7C show a second procedure for vacating the amusement ride.

Figures 8A to 8C show a third procedure for vacating the amusement ride.

15 Figures 9A to 9C show the use of linear actuators or safety interlocks in the operation of a retaining means.

20 Figure 10 shows the ride operatively connected with other rides for synchronous movement.

Figures 11A to 11D show combinations of rides operatively connected in alternative arrangements.

25 Figures 12A and 12B show the ride adapted to be incorporated into a fairground ride, such as a carousel or vertical lift, or the like.

30 Figure 1 shows an amusement ride 1 comprising a base portion 2 supported on the ground and a trunnion 7 mounted on the base portion 2 to give rotation about a substantially vertical axis A. The trunnion 7 is in

operative engagement with a first elongate member 4, said elongate member being adapted to move about a substantially horizontal axis B, said elongate member being in operative engagement with a second elongate member 6 adapted to move about a substantially horizontal axis C parallel to axis B. The second elongate member has a further 3 degrees of movement about the axis of said second elongate member 6 and a passenger station 15 in moveable engagement with said member. The amusement ride movements about said axes are controlled by motors 16, 17 and 18.

10

Figures 2A to 2F illustrate the various conditions that the amusement ride 1 of Figure 1 may assume during a ride. The passenger station 15 is shown having two seats, 20 and 21.

15 Referring to Figures 3A and 3B, alternative mountings of the amusement ride are illustrated. The ride 1 may be supported from a wall 30 or a ceiling 40. The passenger station may also be configured so that arms and legs of a passenger are unsupported.

20 Figure 4 shows two amusement rides 1 in use in a combat game. The two rides are diametrically opposed to each other at a predetermined distance X. Said rides are each mounted on a fixed base or (as shown) on a base 50 in sliding engagement with a rail track 51, the bases and the tracks being parallel with each other. The passenger stations 15 are provided with a controller 52 and with optical (e.g. infra-red, photoelectric or laser) emitter and receiver assemblies 53, enabling the said passenger stations 15 to interact with each other. In a splash park, the optical emitter and receiver assemblies may be substituted with one or more water cannons.

30

The ride is enclosed by a reticulated fence 44 having a closure 60 (for ingress and egress of passengers) and a ticket machine 61 located adjacent the closure 60, for passengers to buy tickets for said ride.

- 5 The combat game is controlled by a computer 70. The computer 70 is integrated with the ticket machine 61 and with the two rides.

Figures 5A and 5B show the passenger station 15. The passenger station 15 is in movable engagement with the output member 80 of the ride. The
10 passenger station 15 comprises a seat 81 with a weight sensor 90 located in the seat 81, a joystick controller 83 and a display means 82.

Figure 5C shows a passenger station 15 fitted with a pull down safety harness 84. The seat 81 is not contained in a capsule 85 (see Figure 5A).

15

Figures 6A to 6C illustrate an alighting procedure for the ride. The ride 1 is shown in a first operative condition 100, attained at the beginning or end of a ride. The robot then lowers to a second operative condition 101, where an optical emitter 200 and receiver 210 assembly, one of said
20 emitter and receiver being located on the ride, ensure that the ride is in the correct alighting position. One or more optical emitter and receiver assemblies may be used to monitor the alighting procedure. One or more optical emitter and receiver assemblies may be used to monitor a ride throughout a ride sequence. Concomitantly a platform 102, activated by
25 hydraulics, is raised from a first operative condition 103 to a second operative condition 104 under the ride 1 (which is in a second operative condition 101). The passengers may then leave/enter the ride. Alternatively, the platform 102 is fixed and the ride is located on a vertically moving pedestal 105 as shown in Figures 7A to 7C. The ride is
30 in a first operative condition 100, attained at the beginning or at the end of a ride. The ride then lowers to an intermediate operative

condition 107. The pedestal 105 is lowered to a second operative condition 101 bringing the passenger into contact with the fixed platform 102. Again, the aforementioned optical emitter and receiver-assemblies may be used to monitor the alighting procedure. The passengers may then enter or leave the ride 1.

In a further alternative shown in Figures 8A to 8C the ride 1 is in a first operative condition 100, attained at the beginning or at the end of a ride. The robot then lowers to a second operative condition 101, where an optical emitter 200 and receiver 210 assembly, one of said emitter and receiver being located on said ride, to ensure that the ride is in the correct alighting position. One or more optical emitter and receiver assemblies may be used to monitor the alighting procedure. Concomitantly a platform 102 activated by hydraulics is extended from a first retracted condition 103 to a second operative condition 104 to engage with the ride 108. The engagement of the platform with the ride may facilitate part of a safety check for the above alighting procedure.

Upon leaving the ride the retaining means (e.g. a safety belt or cage) must be released. Figures 9A to 9C illustrate the use of shot bolt actuators 110 in releasing the retaining means. The shot bolt actuators can only be activated when the ride is in the aforementioned second operative condition 101. The shot bolt actuators 110 when activated release the retaining means 111, permitting the ingress and egress of passengers.

One or more amusement rides 1 of the present invention may be linked by a computer so as to move synchronously. The rides are controlled by a supervisor and control station 120, as illustrated in Figure 10. The amusement rides can also be programmed to move asynchronously to one

another. The rides may also be assembled in various combinations as illustrated in Figures 11A to 11D.

5 The base 2 of the amusement ride 1 of the present invention can be supported on a carousel 130, as illustrated in Figure 12A. One or more of said rides can be mounted onto the carousel. The carousel 130 may alternatively have an elongate centrally located column 131, from which one or more of said rides 1 may be supported, as illustrated in Figure 12B. The rides can then also rotate and move in a vertical plane
10 simultaneously.

ABSTRACT

An amusement ride comprising an output member having an anthropomorphic robot arm adapted for six degrees of movement, said
5 ride further comprising a passenger station in moveable engagement with said output member, a platform, and optionally a ticket reader.

To be accompanied, when published, by Figure 1 of the drawings.